HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF
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The Influence of Sterile Environment, Inspired Air, and Food on the Digestion and Metabolism of Animals.—KIANIZIN (*Jour. de Physiol. et de Path. gén.*, September 15, 1911, xv) placed experimental animals in a sterile bell jar through which sterilized air was circulated. The sterilization of the air was controlled by drawing it, before its passage into the bell jar, through sterile broth. The broth remained clear throughout the experiments, so that there is little doubt but that the air was freed of microörganisms. The animal under observation in the bell jar was placed on a shelf composed of close-meshed wire netting. The excrement dropped through this netting into a strong solution of boric acid. The urine was collected separately. The total nitrogen and the relation of the nitrogen of the urea to total nitrogen was studied, and the ratio of the nitrogen of the urea to total nitrogen was taken as an index of the metabolism. These experiments in each instance showed a reduction in the ratio between urea nitrogen and the total nitrogen, but this reduction in no instance was very considerable. Folin has shown that this ratio between the nitrogen of the urea and the total nitrogen may undergo considerable variation in normal adults upon a mixed diet, so that the relatively slight changes in the nitrogen ratio mentioned by Kianizin are not to be regarded as proving absolutely that bacteria, which ordinarily are present in the air and the food, are absolutely indispensable for the life of the organism. It should be stated that many of the experimental animals died rather quickly. Kianizin did not believe that the cause of death in these cases was due wholly to digestive troubles; he believed that they were caused by an intoxication due to modifications of metabolism. The experiments, while very suggestive, are not conclusive.

The Hygiene of the Swimming Pool.—JOHN W. M. BUNKER (*Amer. Jour. Pub. Hyg.*, November, 1910, xx,) and WHIPPLE and BUNKER (*Eighteenth Annual Convention of the American Society of Municipal Improvements*, 1911) have studied the effects of "bleach" (calcium hypochlorite) in purifying the water of swimming pools. Chemical analyses have shown that the water of swimming pools becomes polluted, the degree of pollution depending largely upon the number of persons bathing in the pool. This pollution is shown by an increase in the amount of free ammonia, albuminoid ammonia, and by a decided increase in the number of bacteria. It is a curious fact that the numbers of Bacillus coli are not increased as markedly as might be expected. In a series of experiments, which are recorded, the colon bacillus is uniformly absent in 0.1 c.c. of water from the swimming pool even after ten days, but is irregularly present in 1 c.c., and quite generally present in 10 c.c. In one experiment the bacteria growing on gelatine at 20° C. increased in numbers from 205 per cubic centimeter to 255,000 in three days, and to 281,000 in four days. After using "bleach" in the proportion of 1 part per million, these numbers were reduced very materially. Thus, a sample of water obtained from the new swimming tank in Brown University showed an original bacterial content of 700 c.c., and this was reduced to zero in fifteen minutes following the addition of the hypochlorite. A similar experiment carried out in the tank itself gave somewhat similar results. Surface samples before the addition of "bleach" yielded a count of 500 bacteria per cubic centimeter. Fifteen minutes after adding one-half a part of bleach per million of water these bacteria were reduced from 700 to 30 per cubic centimeter, and after thirty minutes to 10. At the end of an hour the water was sterile (*i. e.*, no colonies on plates). A sample taken eight hours later, while the pool was still agitated from those who had bathed in it, showed a bacterial content of 5 per cubic centimeter. The pool remained practically sterile for four days, at the end of which time the bacterial count began to rise steadily. It would seem that the application of hydrochlorite of lime offers a cheap, efficient, and convenient method of keeping the number of bacteria in a swimming pool down, and this diminishing the potential danger incident to bathing in a common tub.

The Etiology and Transmission of Measles.—ANDERSON and GOLDBERGER, in a series of articles (*Public Health Reports*, June 9, 1911, xxvi, 847; *Ibid.*, 887; *Jour. Amer. Med. Assoc.*, July 8, 1911, lvii, 113, 114; *Ibid.*, August 5, 1911, lvii, 476 to 478; *Ibid.*, 971, 972; *Ibid*, 1612, 1613) have reported the results of their experiments upon the etiology and mode of transmission of measles. In the first paper by these authors they report upon the susceptibility of the rhesus monkey to inoculation with blood from human cases of measles. Previous to their work it had been generally accepted among laboratory workers that monkeys were not susceptible to the disease. In their third paper Anderson and Goldberger show that the apparent non-susceptibility of the monkey to infection with measles was due to a more or less limitation of the period of infectivity of the blood, beginning at least several hours before, and continuing for about twenty-four hours after, the first appearance of the eruption. At the end of twenty-four hours from the first appearance of the eruption the infectivity of the blood for the rhesus monkey becomes greatly lessened and becomes progressively less thereafter. They draw attention to the fact that this limited period of infectivity also throws much doubt upon the value of previous bacteriological studies of the blood in measles, as it is quite possible that many workers have used non-infective blood. The fourth paper is on the nature of the virus existing in the circulating blood. They found that in a certain proportion of cases the measles virus in the blood is capable of passing through a Berkefeld filter. It resists drying for at least twenty-four hours. The infectivity of the defibrinated blood is destroyed by heating to 55° C. for fifteen minutes; and the defibrinated blood frozen for twenty-four hours is still infective at the end of that time. They were able to pre-